S
946
A3223
1992
gr .7-9

CURRGDHT

EX LIBRIS
UNIVERSITATIS
ALBERTÆNSIS

NATURAL RESOURCE STUDIES

Draft Program of Studies

- **Agriculture**
- **Energy and Mineral Resources**
- **Forestry**
- **Wildlife**

FIELD REVIEW DRAFT

Alberta
EDUCATION
CURRICULUM BRANCH

September 1992

UNIVERSITY LIBRARY
UNIVERSITY OF ALBERTA

NATURAL RESOURCE STUDIES

A. PROGRAM RATIONALE AND PHILOSOPHY

Natural Resource Studies focuses attention on the collective physical and biological features of the environment. These features are influenced by the actions of human kind, and have significant impact on the survival and well-being of present and future generations. The Natural Resource Studies curriculum strives to enable students to understand their interdependence with the environment, develop interest in related issues, and make informed choices that maintain and improve the quality of life they experience within the environment. Fundamental to the program is the sharing of practical information and fostering of attitudes that embrace a conservation ethic – a belief that people can and should take responsibility for the well-being of the planet.

The program is intended to develop knowledge, skills and attitudes that will assist students to work individually and collectively toward the conservation and responsible use of water, land, air, forests and wildlife. Responsible management of these resources will enable society to provide for the needs of present generations, without compromising the ability of future generations to meet their needs. Citizens of Alberta, Canada and the world have a responsibility to fulfill economic, cultural and aesthetic goals through resource development, while embracing a conservation ethic so as to maintain essential ecological processes, genetic diversity and an adequate resource base for future generations. The Natural Resource Studies curriculum endeavours to integrate principles of development and conservation, and encourages students to consider practical and common sense ways of managing their use of resources for the benefit of all. Students will examine scientific, ethical, political, environmental and economic issues that impact decisions that are made about producing, processing and marketing natural resources.

Although students are at various stages of cognitive development, many will continue to use concrete operational thinking. Each course in Natural Resource Studies provides opportunities for students to link concrete and psychomotor learning experiences to more abstract thought processes and levels of thinking. Students will be encouraged to transfer the competencies they have developed in other core and complementary school courses as well as through hobbies, interests and past experiences. As students learn to relate theory and practice in participatory situations, confidence will further their ability to meet the challenges of personal life, work life and further education.

Students are in the process of exploring career options as they move through adolescence toward independence and adult responsibilities. In view of the frequent career changes that students can expect to experience, students need to possess the skills and flexibility to adapt quickly to new situations. Future jobs will require that students are lifelong learners, and able to access information and technology as an

Digitized by the Internet Archive
in 2012 with funding from
University of Alberta Libraries

http://archive.org/details/naturalresourcedraf92albe

aid to solving problems and making decisions. Within these contexts, the Natural Resource Studies curriculum focuses attention on basic, transferable and career-specific knowledge, skills and attitudes that will assist students to:

- become responsible citizens and develop further understanding of the world in which they live

- appreciate career opportunities in the development and conservation of natural resources, and the preparation needed to enter and progress in related fields

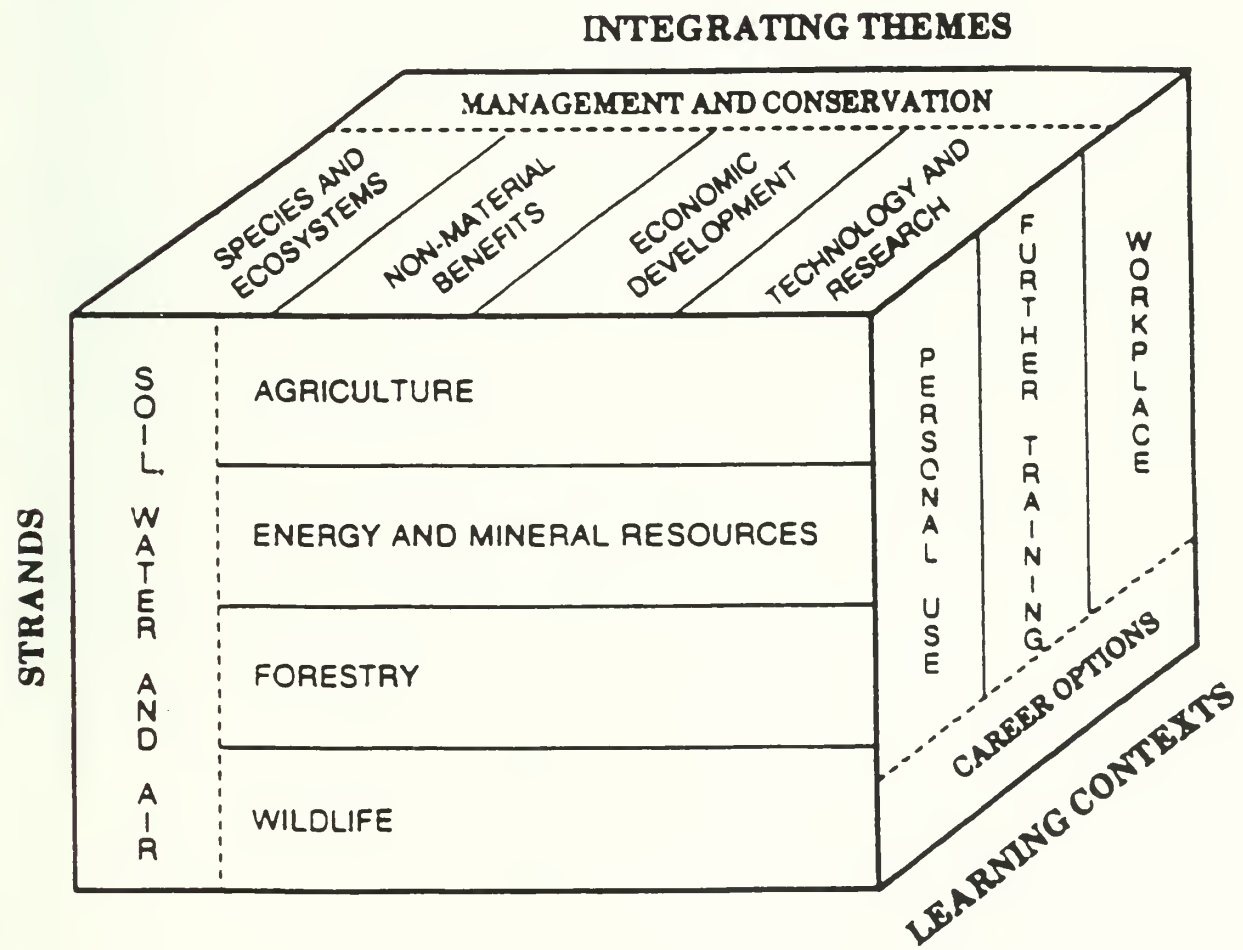
- develop confidence and flexibility as they assume adult roles and move into the workplace and further education programs.

Introductory-level courses within Natural Resource Studies develop awareness and establish a foundation of environmental knowledge, skills and attitudes. Learning activities begin at a concrete level, and enable students to understand the environment in a personal way. Intermediate- and advanced-level courses foster exploration, specialization, preparation and empowerment, and provide opportunities for students to develop more specialized knowledge, skills and behaviours relevant to careers in natural resources or further education and training.

B. PROGRAM ORGANIZATION

The model depicts major emphases within the Natural Resource Studies program. Three dimensions that provide a basis for selecting and organizing content are represented in the model.

- The INTEGRATING THEMES, represented on the upper face of the model, provide structure for the program and focus attention on learning goals common to each strand.
- The LEARNING CONTEXTS, represented on the right face of the model, foster the development of knowledge and behaviours that will enable students to meet the demands of daily living, further training and the workplace.
- The STRANDS provide situational and concrete learning experiences that support the development of knowledge, skills and attitudes relevant to the integrating themes and learning contexts. Each strand focuses on an area of land and resource use within Alberta.



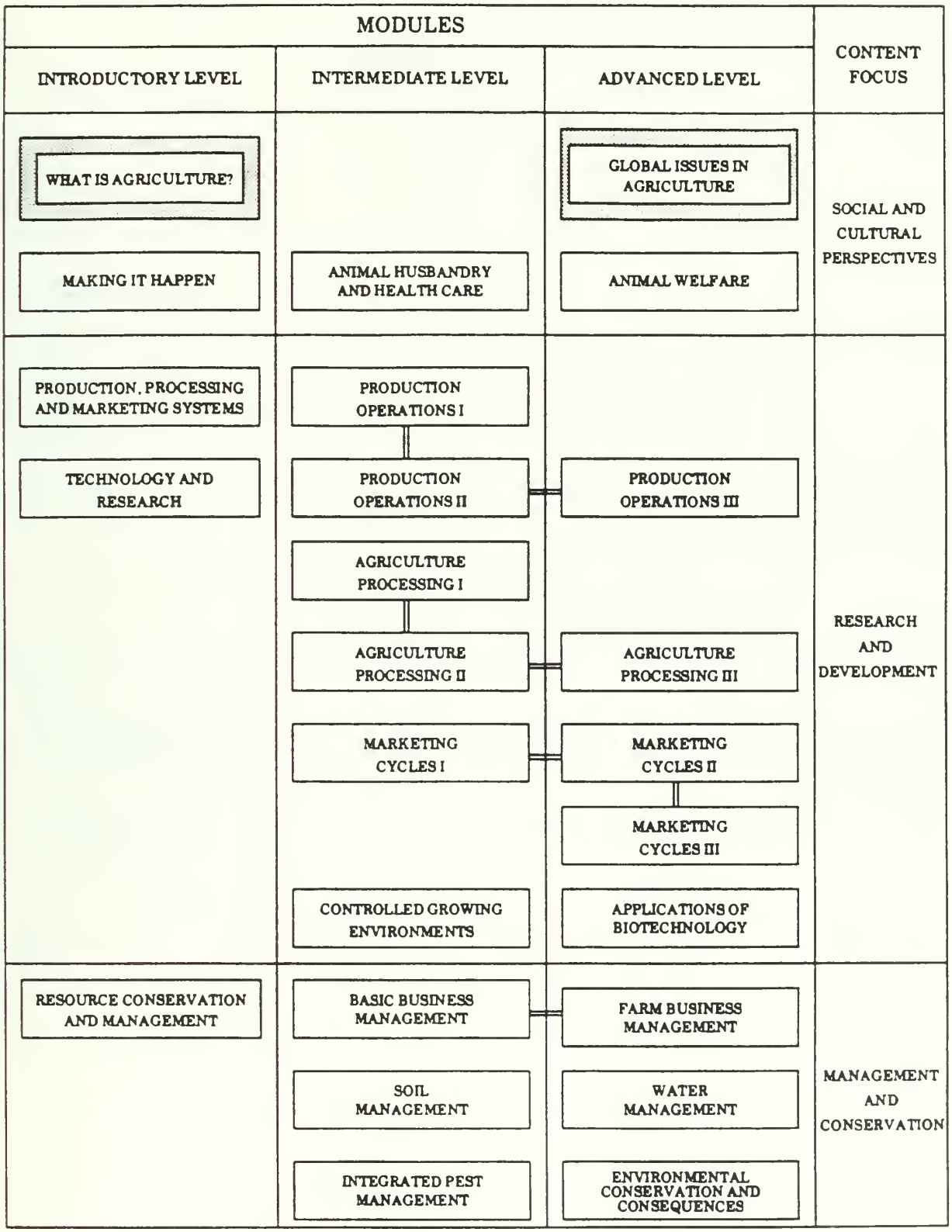
Courses in Natural Resource Studies may be designed by:

- combining modules from one or more of the strands depicted in the model (e.g., Agriculture, Energy and Mineral Resources, Forestry, Wildlife)
- combining modules in Natural Resource Studies with modules from other CTS strands.

Modules offered at the junior high level should reflect the interests and needs of students, and do not require specialized facilities or equipment. Students will benefit from interaction and partnership with community members as well as access to up-to-date information sources.

The following scope and sequence charts outline modules within each strand that can be combined to form courses in Natural Resource Studies. Course planning should take into account the module sequences and prerequisites indicated in each chart.

AGRICULTURE SCOPE AND SEQUENCE

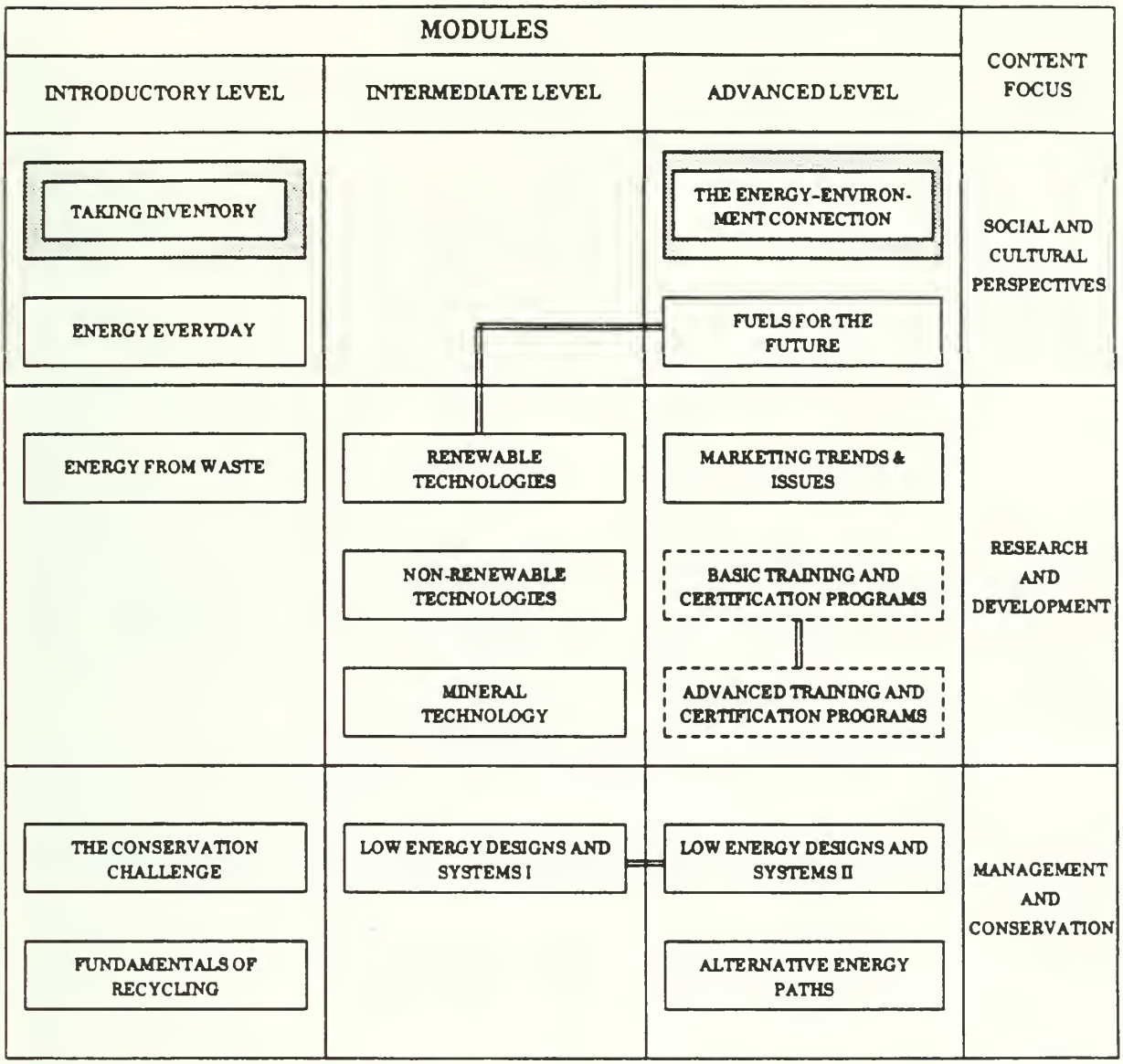


Foundation

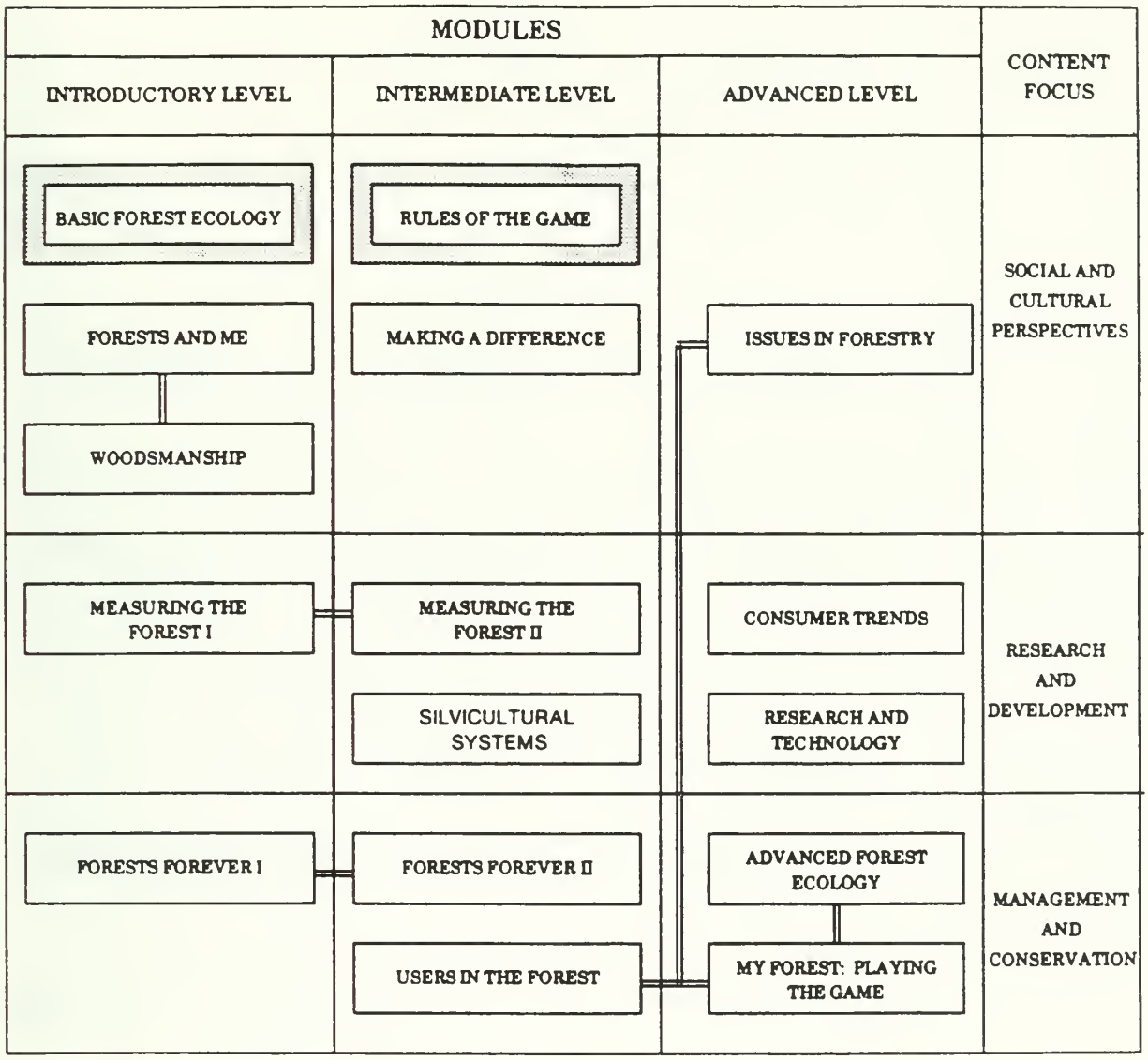
Expansion

Double solid line indicates module sequences and prerequisites.

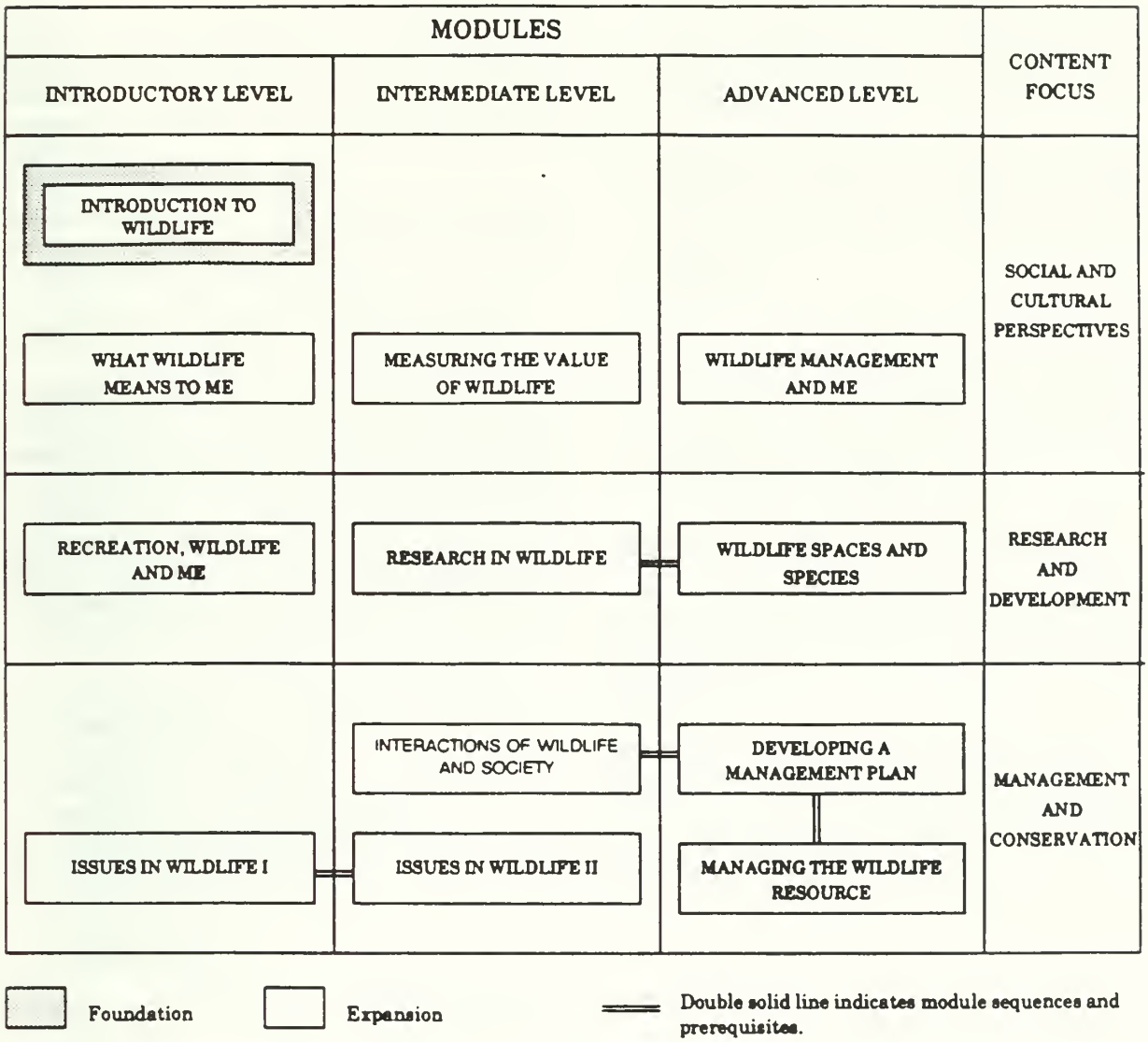
ENERGY AND MINERAL RESOURCES SCOPE AND SEQUENCE



FORESTRY SCOPE AND SEQUENCE



WILDLIFE SCOPE AND SEQUENCE



C. LEARNER EXPECTATIONS

Learner expectations describe the competency that students are to develop. They require students to be active learners who can combine knowledge, skills and attitudes within an applied context.

Learner expectations are categorized in three, progressively detailed, stages: general, module and specific learner expectations.

GENERAL LEARNER EXPECTATIONS

General learner expectations for Natural Resource Studies serve as the foundation for the module and specific learner expectations. They are comprised of the knowledge, skills, attitudes, motivation and commitment to work individually and collectively, as citizens and community members, toward the conservation and responsible use of water, land, air, forests and wildlife. Specific competencies will include:

- critical and creative thinking
- communication
- enterprise and design
- goal setting and planning
- negotiation/consensus building
- problem solving/decision making
- research and organization
- responsibility
- self-management
- team building.

In order to achieve these competencies, *the student will*:

- develop greater awareness of the economic and social significance of natural resources in Alberta and the rest of the world, and the advantages/disadvantages of resource development

- describe the characteristics of production, processing and marketing systems within Alberta's natural resource industries

- monitor technologies and research programs designed to develop, conserve, protect and enhance the productivity of our resource base

- translate development and conservation goals into viable plans for managing the use of natural resources

- develop competencies and behaviours that have broad application to environmental career paths, and specific application to careers within Alberta's natural resource industries

- develop a more positive self-concept and increased understanding of personal interests, values, aptitudes and abilities, so as to enter the world of work or further education programs with increased confidence and success.

MODULE LEARNER EXPECTATIONS

Module learner expectations are a refinement of those expressed in the general learner expectations. They are listed at the beginning of each module.

SPECIFIC LEARNER EXPECTATIONS

Module expectations are further refined through the specific learner expectations indicated for each concept addressed.

MODULE 1: WHAT IS AGRICULTURE?

Content Focus: Social and Cultural Perspectives

Status: Foundation

The student will:

- develop an awareness of the diversity of agricultural activity in Alberta, Canada and the global community
- develop an appreciation of the economic and social significance of agriculture
- outline historical trends in agriculture
- investigate career paths within the agriculture industry.

Concept	Specific Learner Expectations
Diversity	*The student will:* • explain the function of subsistence agriculture and commercial agriculture • describe food production and consumption patterns at local, national and international levels • identify non-traditional forms of agriculture that have potential to provide aesthetic, emotional and health benefits • outline the broad field of agriculture and related industries in Alberta and in Canada: – production – processing – marketing and distribution • identify business/labour that provides inputs and services to agriculture • describe the function of community services and government agencies serving agriculture • compare and contrast agricultural activities in rural and urban areas

MODULE 1: WHAT IS AGRICULTURE? (continued)

Concept	Specific Learner Expectations
Economic and Social Signficiance	*The student will:* • relate consumer needs/wants to a rationale for the exchange of agricultural goods and services at local and global levels • examine the flow of agricultural goods and services between Canada and other nations • assess the impact of agricultural imports and exports on balance of trade and the national economy • assess the impact of agriculture on material and conservation goals, and on other quality of life factors
Historical Trends	*The student will:* • outline major changes in production agriculture from past to present – commodity production – farm site – mechanization – capitalization required • provide reasons for the rapid growth of the food processing industry • describe historical trends in the marketing and trade of agricultural products • compile a list of technological developments affecting or likely to affect agriculture • assess the impacts of trends in agriculture on people, the economy and the environment • make predictions about agriculture in the future – consumer trends – government involvement – world markets

MODULE 1: WHAT IS AGRICULTURE? (continued)

Concept	Specific Learner Expectations
Career Paths	*The student will:* • outline career clusters and the range of occupational opportunities within the agriculture industry: – agriculture science/production management – agriculture processing/food and fibre – agriculture marketing /distribution and retail services – agriculture supplies and services – agriculture mechanization/engineering and technical support – agriculture resource management • gather employment statistics within one or more career clusters: – types of careers – number of workers – employment trends • infer career opportunities and risks from employment statistics • research one or more career paths in agriculture: – job description/working conditions – entry requirements/competencies – educational/training opportunities – opportunity for advancement – opportunity for self-employment and entrepreneurship

MODULE 2: MAKING IT HAPPEN

Content Focus: Social and Cultural Perspectives

Status: Expansion

The student will:

- identify critical factors that influence decision making within the agriculture industry
- trace the stages through which an agricultural product moves from producer to consumer
- investigate potential markets and marketing systems for agricultural goods and services
- develop an understanding of how agricultural markets are expanded and new products are developed.

Concept	Specific Learner Expectations
Crticial Factors	*The student will:* • identify environmental factors that support or inhibit agriculture: – land – water – weather • assess the impact of land use decisions on the agriculture industry: – urbanization – resource development – environmental stewardship • explain the role of developing technologies and financial resources in agricultural endeavours • analyze the effects of government policies, programs and standards on the agriculture industry • characterize an agriculture industry in Alberta by describing factors that influence practices and decision making within the industry

MODULE 2: MAKING IT HAPPEN (continued)

Concept	Specific Learner Expectations
Production Networks	*The student will:* • classify and sequence the steps required to move products from producer to consumer – transportation – processing – grading – packaging – storing – merchandising • construct a flowchart that illustrates stages of production, processing and marketing • identify materials and services that are used at each stage of production, processing and marketing – human resources – natural resources – technology – energy – transportation and storage – inspection and regulation • describe the range of occupations, people and networks involved in producing, processing and marketing an agricultural product
Marketing Systems	*The student will:* • define the term marketing, and discuss components of marketing in the agriculture industry – packaging and labelling – pricing – distribution – advertising and sales • describe potential markets for agricultural commodities: – local – national – international • identify and compare marketing alternatives, including free market systems and quota systems • explain the operation of marketing boards, cooperatives and other structures used to buy/sell agricultural commodities • design and evaluate an approach to marketing an agricultural commodity

MODULE 2: MAKING IT HAPPEN (continued)

Concept	Specific Learner Expectations
Product Development	*The student will:* • consider factors that influence consumer trends and markets for new products – social – economic – environmental • identify market opportunities that arise from specialization, international trade and participation in a global economy • outline market conditions leading to, and steps in the development of an agricultural commodity • formulate a plan for identifying market opportunities, developing a new product, and assessing the venture

MODULE 3: PRODUCTION, PROCESSING AND MARKETING SYSTEMS

Content Focus: Research and Development

Status: Expansion

The student will:

- examine basic requirements and management techniques involved in producing an agricultural commodity
- trace the steps in processing, packaging, transporting and storing an agricultural commodity
- identify and assess various strategies that are used to market an agricultural commodity
- investigate career paths related to producing, processing and/or marketing an agricultural commodity.

Concept	Specific Learner Expectations
Production	*The student will:* • identify basic physical requirements for the production of an agricultural commodity: – climate – space variables – nutrient requirements • consider the capability of a particular piece of land or type of soil to support production • outline a strategy for protecting the health of a chosen commodity – identification of diseases/ailments – treatment, control and prevention • apply concepts of breeding and selection to production of an agricultural commodity – systems of breeding – selection criteria • specify buildings, structures and equipment appropriate to production – design considerations – operation and maintenance – safety • perform basic business management functions as they relate to production – financial planning/record keeping – handling risk and uncertainty – environmental constraints – legal considerations

MODULE 3: PRODUCTION, PROCESSING AND MARKETING SYSTEMS (continued)

Concept	Specific Learner Expectations
Processing	*The student will:* • identify steps that are followed in processing and packaging an agricultural commodity – inputs to the product – producing the commodity – safety and quality control – product identification and grading – label requirements • compare and constrast different methods of transportation and storage – trucks, railways, airlines – containerization, bulk handling • outline a strategy for maintaining the quality of a chosen commodity during transportation and storage – parameters of quality – control measures • describe buildings, structures and equipment appropriate to processing, transportation and storage – design considerations – operation and maintenance – safety • consider basic business management functions as they relate to processing – financial planning/record keeping – labour requirements – environmental constraints – food inspection and quality control
Marketing	*The student will:* • identify and compare viable marketing alternatives for an agricultural commodity – direct producer marketing – open markets – marketing boards – cooperatives • identify factors that influence commodity pricing – cost factors – supply and demand – market competition • consider the effectiveness of different types of commodity packaging – for consumer purposes – as a marketing tool

MODULE 3: PRODUCTION, PROCESSING AND MARKETING SYSTEMS (continued)

Concept	Specific Learner Expectations
Marketing (continued)	*The student will:* • infer the impact of advertising on personal preferences and consumer decisions • research potential markets for a chosen commodity – local – national – international • design and evaluate a strategy for marketing an agricultural commodity, considering – pricing – packaging and labelling – advertising – sales and distribution
Career Paths	*The student will:* • outline career clusters related to producing, processing and/or marketing an agricultural commodity – agriculture science/production management – agriculture processing/food and fibre – agriculture marketing/distribution and retail services – agriculture supplies and services – agriculture mechanization/engineering and technical support – agriculture resource management • gather employment statistics within one or more career clusters – types of careers – number of workers – employment trends • infer career opportunities and trends from employment statistics • research one or more career paths that involve producing, processing and/or marketing a chosen commodity – job description/working conditions – entry requirements/competencies – educational/training opportunities – opportunity for advancement – opportunity for self-employment and entrepreneurship

MODULE 1: TAKING INVENTORY

Content Focus: Social and Cultural Perspectives

Status: Foundation

The student will:

- identify and describe the characteristics of energy and mineral resources found in Alberta
- develop an appreciation of the economic and social significance of Alberta's energy and mineral resources
- describe the range of energy alternatives available to Albertans, and assess their potential to meet our needs
- investigate career paths within Alberta's energy and mineral resource industries.

Concept	Specific Learner Expectations
Alberta's Energy and Mineral Resources	*The student will:* • compare the characteristics of renewable and non-renewable energy resources • identify, describe and locate on a map renewable energy resources available in Alberta – solar – wind – biomass – geothermal – water • identify, describe and locate on a map known reserves of non-renewable energy in Alberta – oil – natural gas – coal – nuclear fuels • identify, describe and locate on a map the main types of minerals found in Alberta – metals – non-metals – structural materials

MODULE 1: TAKING INVENTORY (continued)

Concept	Specific Learner Expectations
Economic and Social Signficiance	*The student will:* • identify major energy use sectors in Alberta and describe energy use within each sector – residential – commercial – industrial – transportation • examine applications of metallic, non-metallic and structural materials found in Alberta • outline trends in mineral markets, and competition from a range of raw material substitutes • consider how Alberta's energy and mineral industries influence the local and national economy • describe the flow of energy and mineral resources between Canada and other nations – important export partners – contribution to world energy supply • infer the impact of Alberta's energy and mineral industries on material and conservation goals, and on other quality of life factors
Energy Alternatives	*The student will:* • outline historical trends in energy production and use – renewables – non-renewables • compile a list of technological developments affecting or likely to affect energy production in Alberta • explain existing and potential applications of solar, wind, biomass, water and geothermal energy, and why solar and wind energy have the greatest potential for use in Alberta • explain existing and potential applications of coal, conventional oil and natural gas, heavy oil and oil sands in Alberta • infer the impact of renewable and non-renewable energy alternatives on people, the economy and the environment • make predictions about future energy production and use in Alberta – societal needs – alternative energy paths

MODULE 1: TAKING INVENTORY (continued)

Concept	Specific Learner Expectations
Career Paths	*The student will:* • outline career clusters and the range of occupational opportunities within the energy and/or mineral industries: – production – processing – marketing and distribution – supplies and services – mechanization/engineering and technical support – resource management • gather employment statistics within one or more career clusters: – types of career – number of workers – employment trends • infer career opportunities and trends from employment statistics • research and or more career paths in an energy and/or mineral industry: – job description/working conditions – entry requirements/competencies – educational/training opportunities – opportunity for advancement – opportunity for self-employment and entrepreneurship

MODULE 2: ENERGY EVERDAY

Content Focus: Social and Cultural Perspectives

Status: Expansion

The student will:

- describe products and by-products derived from Alberta's energy and mineral resources, and their applications in society
- develop greater awareness of energy-intensive lifestyles and societal trends in energy and mineral use
- assess the impacts of energy and mineral development on the environment.

Concept	Specific Learner Expectations
Products and By-products	*The student will:* • distinguish between primary and secondary energy sources in Alberta, and give examples of each • explain the role of Alberta's primary energy sources in producing electricity and heat energy • identify and describe products and by-products derived from Alberta's petroleum resources – crude oil – natural gas – petrochemicals • identify and describe products and by-products derived from Alberta's mineral resources – metals – non-metals – structural materials

MODULE 2: ENERGY EVERDAY (continued)

Concept	Specific Learner Expectations
Lifestyle	*The student will:* • ascertain personal and societal energy needs and how these are met – space and water heating – heat for industrial processing – fuels for transportation – electricity • compile an inventory of energy sources, minerals and related products in daily use • develop a strategy for monitoring personal energy consumption, and use results to extrapolate energy consumption within the community • infer the impacts of historical trends in Alberta's energy and mineral industries on people and the economy • make predictions about Alberta's energy and mineral industries in the future – alternative energy sources – material substitutes – market competition and change
Environmental Impact	*The student will:* • explain how the extraction and development of fossil fuels and/or minerals can modify the environment – land – water – atmosphere • describe instances of environmental modification and their impact on local populations – personal and public health – land use practices – employment trends • make predictions regarding environmental impacts at a global level – deforestation – acid deposition – climate change • infer short-term and long-term gains and losses related to the extraction and development of fossil fuels and/or minerals

MODULE 3: THE CONSERVATION CHALLENGE

Content Focus: Management and Conservation

Status: Expansion

The student will:

- explain the need for energy conservation at personal, local and global levels
- describe our potential to conserve energy in Alberta
- develop an understanding of personal and shared actions that encourage energy conservation.

Concept	Specific Learner Expectations
Need for Conservation	*The student will:* • describe major components of energy conservation – using less energy – relying more on renewable energy • provide justification for the conservation of non-renewable energy – declining reserves – environmental impact • describe ways in which energy development and use may alter air, land and water – pollution – erosion – deforestation • explain how local patterns of energy consumption may influence the environment at global levels – acid precipitation – global warming – ozone depletion • relate patterns and trends in energy consumption to economic goals – sustainable development – economic diversification/expansion • make a personal judgement as to the value of energy conservation

MODULE 3: THE CONSERVATION CHALLENGE (continued)

Concept	Specific Learner Expectations
Potential to Conserve	*The student will:* • compare and contrast renewable and non-renewable sources of energy in terms of their advantages and disadvantages – environmental – economic • discuss the benefits of relying more on renewable energy sources, and conserving non-renewable energy sources for their ideal use and less damage to the environment • conduct research on a renewable energy source that is viable in Alberta • consider our potential to conserve energy within major sectors of society in Alberta – residential – commercial – industrial – transportation • relate specific energy conserving practices to energy source saved and benefits to society
Personal and Shared Actions	*The student will:* • propose practical strategies to conserve energy in the home, school and community – recycling and reusing – reducing water, heat and electrical consumption • plan, conduct and assess a school-wide campaign to increase awareness of energy, conservation and the environment – establish goals – plan and conduct – assess impact • debate on issue regarding the energy-environment connection – conduct research – develop a position – participate in debate • develop consensus regarding a local issue involving the development and/or use of an energy source – conduct research – generate alternatives – agree to a workable solution • demonstrate personal and shared commitment to conserve energy at personal, local and global levels

MODULE 1: BASIC FOREST ECOLOGY

Content Focus: Social and Cultural Perspectives

Status: Foundation

The student will:

- develop an awareness of the complexity and interrelatedness of elements in the forest ecosystem
- examine the process of change in a forest environment
- identify trees that grow in Alberta and Canada, and the conditions that determine their distribution.

Concept	Specific Learner Expectations
Forest Ecosystems	*The student will:* • identify living and non-living elements of forest ecosystems – soil characteristics – climate – flora and fauna – soil organisms • examine the interrelatedness of elements within a local forest environment – relationship of soil, air and water characteristics to plant growth – interactions and dependencies among living organisms • explain the role of trees within a forest ecosystem – exchange of gases – nutrient cycling – wildlife habitat – soil conservation • analyze food relationships among living organisms within a local forest environment – role of producers, consumers and decomposers – food chains and webs • compare the ecological niches of selected plant and animal species native to Alberta

MODULE 1: BASIC FOREST ECOLOGY (continued)

Concept	Specific Learner Expectations
Forest Change	*The student will:* • identify natural agents of change in a forest environment – fire – disease – weather • infer structural and/or behavioural adaptations of living organisms to particular changes in the forest environment • consider the impacts of specific environmental changes on a forest community – short-term consequences – long-term consequences • give examples of primary, secondary and successional sequences of change in a forest environment • describe Alberta's natural forest history
Forest Regions	*The student will:* • identify factors that enhance the development of forests and determine the distribution of living organisms within forest regions – land form – climatic factors • infer possible reasons for the distribution of trees found in natural regions of Canada • locate and describe the eight forest regions of Canada – Boreal – Subalpine – Montane – Coast – Columbia – Deciduous – Great Lakes/St. Lawrence – Acadian • identify common trees that grow in specific regions of Alberta and Canada.

MODULE 2: FORESTS AND ME

Content Focus: Social and Cultural Perspectives

Status: Expansion

The student will:

- describe the range of social, cultural, economic and environmental benefits provided by forests
- assess the impact of personal needs, wants and beliefs on the forest resource
- investigate potential career paths in forestry.

Concept	Specific Learner Expectations
Forest Role	*The student will:* • identify and describe social and cultural benefits derived from forests – recreational – spiritual – aesthetic • identify and describe economic benefits derived from forests – direct and indirect employment – wood fibre – tourism – subsistence • identify and describe environmental benefits derived from forests – wildlife habitat – watershed protection and maintenance – domestic grazing – water, air and soil quality – maintenance of ecosystems
Personal Impact	*The student will:* • assess the impact of personal attitudes, actions and lifestyle on the forest resource – conservation ethic – consumer practices – recreational patterns • describe how general consumer and marketing trends in society may affect the forest resource

MODULE 2: FOREST AND ME (continued)

Concept	Specific Learner Expectations
Personal Impact (continued)	*The student will:* • propose personal strategies for using the forest resource that foster the attainment of social, cultural, economic and environmental goals – personal actions – leadership roles
Career Paths	*The student will:* • outline career clusters and the range of occupational opportunities within the forestry sector – forest resource inventory – forest ecology – forest resource protection – forest products industry – forest resource management • gather employment statistics within one or more career clusters – types of careers – number of workers – employment trends • infer career opportunities and trends from employment statistics • infer impacts of the marketplace on employment opportunities • research one or more career paths in forestry – job description/working conditions – entry requirements/competencies – educational/training opportunities – opportunity for advancement – opportunity for self-employment and entrepreneurship.

MODULE 3: FORESTS FOREVER I

Content Focus: Management and Conservation

Status: Expansion

The student will:

- outline historical trends in the use of Canada's forests
- develop an understanding of how increased demands on the forest have created a need for conservation and management of the forest resource
- examine the role of technology and research in forest protection.

Concept	Specific Learner Expectations
Forest History	*The student will:* • outline changing patterns of forest use in Canada and Alberta from past to present • provide reasons for the growth of Canada's forest industry • compile a list of technological developments affecting or likely to affect Canada's forest resources • trace the history of forest land ownership in Canada and Alberta • infer the impact of historical trends in forest use and ownership on people, the economy and the environment • make predictions about the use of Canada's forest resources in the future
Conservation and Management	*The student will:* • compare and contrast different uses of the forest resource in terms of their advantages and disadvantages – environmental – economic • relate concepts of sustainable development and sustainable yield to practical strategies for managing the forest resource

MODULE 3: FORESTS FOREVER I (continued)

Concept	Specific Learner Expectations
Conservation and Management (continued)	*The student will:* • debate an issue regarding sustainable development and/or sustainable yield – conduct research – develop a position – participate in debate • examine multiple demands that are placed on forested areas in Alberta by industry, recreation and wildlife • develop consensus regarding a plan for the integrated use of a local forested area – conduct research – generate alternatives – agree to a workable solution • demonstrate personal and shared commitment to conserve and manage the forest resource
Forest Protection	*The student will:* • identify and describe major components of forest protection – stand improvement – forest fire management – pest and disease control – reforestation • provide justification for protecting the forest resource – material and non-material benefits – environmental impact • explain basic goals and techniques of stand improvement and forest fire management • identify and describe symptoms of common forest pests and diseases • compare different methods of pest and disease control – biological – chemical • describe natural and artificial methods of reforestation.

MODULE 1: INTRODUCTION TO WILDLIFE

Content Focus: Social and Cultural Perspectives

Status: Foundation

The student will:

- develop an awareness and appreciation of wildlife
- examine the complexity and interrelatedness of wildlife and dynamic ecosystems
- assess the need to manage and conserve the wildlife resource.

Concept	Specific Learner Expectations
Awareness and Appreciation	*The student will:* • characterize wildlife as a renewable natural resource, including all plants and animals that are not domesticated • give evidence of the diversity in wildlife species – size – form – colour and shape • identify similarities among wildlife and humans – basic needs – behavioural characteristics – structural characteristics • explain how wildlife may be used as a barometer of overall environmental quality.
Dynamic Ecosystems	*The student will:* • identify living and non-living components of ecosystems – soil, water and air characteristics – climate – plant and animal species – soil organisms • examine the interrelatedness of components within a local habitat – arrangement of food, water, shelter and space in relation to each other – relationship of soil, water and air characteristics to plant and animal health

MODULE 1: INTRODUCTION TO WILDLIFE (continued)

Concept	Specific Learner Expectations
Dynamic Ecosystems (continued)	*The student will:* • analyze food relationships among wildlife species – role of producers, consumers and decomposers – food webs and energy chains • identify environmental factors that limit the size of wildlife populations – disease and predation – climatic conditions – pollution and accidents – shortages of life's necessities • relate the concept of carrying capacity to the number, health and distribution of wildlife in a local environment • infer that over a period of time wildlife must adjust or adapt to the environment in which they occur, alter the environment, or perish • compare the ecological niches of selected wildlife species native to Alberta.
Need to Manage	*The student will:* • provide justification for managing and conserving the wildlife resource – consumptive and non-consumptive benefits – environmental impact • explain how the health and well-being of both humans and wildlife are dependent upon the quality of the natural environment • examine natural and human-caused changes in habitat, and their impact on wildlife species • make personal judgements as to the value of wildlife management and conservation.

MODULE 2: WHAT WILDLIFE MEANS TO ME

Content Focus: Social and Cultural Perspectives

Status: Expansion

The student will:

- describe the range of social, cultural, economic and environmental benefits provided by wildlife
- assess the impact of personal needs, wants, beliefs and actions on the wildlife resource
- investigate potential career paths in wildlife.

Concept	Specific Learner Expectations
Wildlife Benefits	*The student will:* • identify and describe social and cultural benefits derived from wildlife – recreational – spiritual and aesthetic – medicinal • identify and describe economic benefits derived from wildlife – tourism – subsistence – commercial trade • identify and describe environmental benefits derived from wildlife – water, air and soil quality – diversity of life forms – maintenance of ecosystems.
Personal Impact	*The student will:* • assess the impact of personal attitudes, actions and lifestyle on wildlife and the environment – recreational patterns – housing and transportation choices – food and clothing – energy use • describe how societal actions may affect wildlife through the destruction of habitat – construction of roads and buildings – extraction or harvesting of natural resources – addition of materials to the environment

MODULE 2: WHAT WILDLIFE MEANS TO ME (continued)

Concept	Specific Learner Expectations
Personal Impact (continued)	*The student will:* • propose responsible and ethical actions in relation to wildlife and the environment – personal actions – leadership roles.
Career Paths	*The student will:* • outline career clusters and the range of occupational opportunities within wildlife-related fields – recreation – tourism – consumptive employment – literature, art and/or film – preservation and management • gather employment statistics within one or more career clusters – types of careers – number of workers – employment trends • infer career opportunities and trends from employment statistics • research one or more career paths in a wildlife-related field – job description/working conditions – entry requirements/competencies – educational/training opportunities – opportunity for advancement – opportunity for self-employment and entrepreneurship.

MODULE 3: ISSUES IN WILDLIFE I

Content Focus: Management and Conservation

Status: Expansion

The student will:

- identify trends, issues and consequences that arise from cultural and social interaction with wildlife
- examine the role of scientific knowledge and technical skills in managing the wildlife resource
- develop an understanding of personal and shared actions that foster wildlife conservation and management.

Concept	Specific Learner Expectations
Trends, Issues and Consequences	*The student will:* • infer the impacts of loss and degradation of habitat on wildlife populations • describe societal trends that lead to the destruction of wildlife habitat – increasing human population – technological development • analyze conflicts among consumptive and non-consumptive groups which involve how, when and to what degree wildlife populations are used • consider implications of the commercial sale of wildlife and related products • examine situations where the demand for wildlife tends to be greater than the available supply • research issues concerning efforts to save endangered species for their scientific, biological, aesthetic, economic and/or intrinsic value.

MODULE 3: ISSUES IN WILDLIFE I (continued)

Concept	Specific Learner Expectations
Wildlife Management	*The student will:* • outline historical trends in the development of wildlife management practices – regulations – predator control – creation of refuges – stocking programs – habitat improvement • infer the impact of trends in wildlife management on people and the environment • identify and describe techniques used to manage the wildlife resource – information and education – regulations involving people – inventory – habitat management – population manipulation – regulated harvest • explain the long-range benefits of acquiring, protecting, improving, and restoring wildlife habitat.
Personal and Shared Actions	*The student will:* • research a range of philosophies, ethics and alternatives regarding wildlife and how best to ensure its health and viability • debate an issue regarding the consumptive and/or non-consumptive use of a wildlife resource – conduct research – develop a position – participate in debate • examine how wildlife depletion and habitat destruction can be reduced through the adoption of alternative human lifestyles and social expectations • develop consensus regarding a plan for the use of a wildlife resource – conduct research – generate alternatives – agree to a workable solution

MODULE 3: ISSUES IN WILDLIFE I (continued)

Concept	Specific Learner Expectations
Personal and Shared Actions (continued)	*The student will:* • identify ways in which individuals can influence public decisions that affect wildlife and the environment – voting – lobbying – seeking office – supporting compatible interest groups • demonstrate personal and shared commitment to conserve and manage the wildlife resource.

S 946 A3223 1992 GR-7-9
NATURAL RESOURCE STUDIES DRAFT
PROGRAM OF STUDIES -- /FIELD
REVIEW DRAFT --
NL 40217144 CURR HIST